

IN THE CLAIMS:

Please amend Claims 1 and 4 as indicated below. The following is a complete listing of claims and replaces all prior versions and listings of claims in the present application:

Claim 1 (currently amended): An image pickup apparatus, comprising:

a plurality of pixels~~[[,]]; and~~

an output unit,

~~wherein each pixel includes a first sensitive area and a second sensitive area,~~

~~wherein the first and second sensitive areas of a pixel receive light flux~~

~~respectively corresponding to different areas of an exit pupil of an imaging optical system, and~~

wherein each pixel includes ~~[[two]]~~ first and second photoelectric conversion portions formed arranged therein based on the first and second sensitive areas of the pixel so that a sensitivity distribution of the first sensitive area and a sensitivity distribution of the second sensitive area partially overlap in an area interposed between the two photoelectric conversion portions of the pixel; and such that:

an interval separates the first and second photoelectric conversion portions,

the first photoelectric conversion portion has a first sensitivity distribution for carriers generated in a first region corresponding to the first photoelectric conversion portion and the interval, the first sensitivity distribution producing a first image component on an exit pupil of the image pickup apparatus,

the second photoelectric conversion portion has a second sensitivity distribution for carriers generated in a second region corresponding to the second photoelectric conversion

portion and the interval, the second sensitivity distribution producing a second image component on the exit pupil,

each sensitivity distribution is a distribution of signal intensity as a function of distance, and

the first and second sensitivity distributions partially overlap with each other, resulting in a partial overlap of the first and second image components with each other, and

[[an]] wherein the output unit [[that]] receives a first electric signal and a second electric signal from each of the plurality of pixels and [[that]] detects and outputs a phase difference between corresponding first and second electric signals from each of the plurality of pixels;

~~wherein the first and second sensitive areas of each of the plurality of pixels are arranged so that corresponding first and second electric signals, received by the output unit, each includes signals generated in the first and second sensitive areas of a corresponding one of the plurality of pixels.~~

Claim 2 (withdrawn): An apparatus according to claim 1, wherein the plurality of pixels includes at least two types of pixels having different separation directions of the first and second photoelectric conversion portions.

Claim 3 (withdrawn): An apparatus according to claim 1, wherein the plurality of pixels includes at least two types of pixels having different sensitivity regions.

Claim 4 (currently amended): An apparatus according to claim 1, wherein the first and second ~~sensitive areas~~ sensitivity distributions are ~~formed~~ determined based on an F-number of ~~[[the]]~~ an imaging optical system used in detection of focus.

Claim 5 (withdrawn): An apparatus according to claim 1, wherein each of the plurality of pixels has a common amplification element adapted to amplify and output a signal from the first photoelectric conversion portion and a signal from the second photoelectric conversion portion, a first transfer switch adapted to transfer the signal from the first photoelectric conversion unit to the common amplification element, and a second transfer switch adapted to transfer the signal from the second photoelectric conversion portion to the common amplification element.

Claim 6 (withdrawn): An apparatus according to claim 5, further comprising a drive circuit adapted to control a first mode in which the signals from the first and second photoelectric conversion portions are added by an input unit of the common amplification element and output, and a second mode in which the signals from the first and second photoelectric conversion portions are independently output from the common amplification element.

Claim 7 (withdrawn): An apparatus according to claim 1, further comprising  
an A/D conversion circuit adapted to convert a signal from the image pickup element into a digital signal, and  
a digital signal processing circuit adapted to process the signal from the A/D conversion circuit.

Claims 8-12 (cancelled).